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(12) **United States Patent**
Roy

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(54) **FRAME BACK RETAINER**

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Related U.S. Application Data

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(51) **Int. Cl.**
A47G 1/06 (2006.01)

(52) **U.S. Cl.** **40/796**; 40/790

(58) **Field of Classification Search** ..... 40/796, 40/790; 411/501; 292/241, 281, DIG. 35
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

509,626	A *	11/1893	Patterson	40/790
1,041,776	A *	10/1912	Gibson	40/732
1,222,468	A *	4/1917	Rosen	40/796
2,798,327	A *	7/1957	Dibb	40/790
4,088,053	A *	5/1978	Tyree	411/501
6,125,567	A *	10/2000	Roy	40/790
7,272,903	B2	9/2007	Roy	

* cited by examiner

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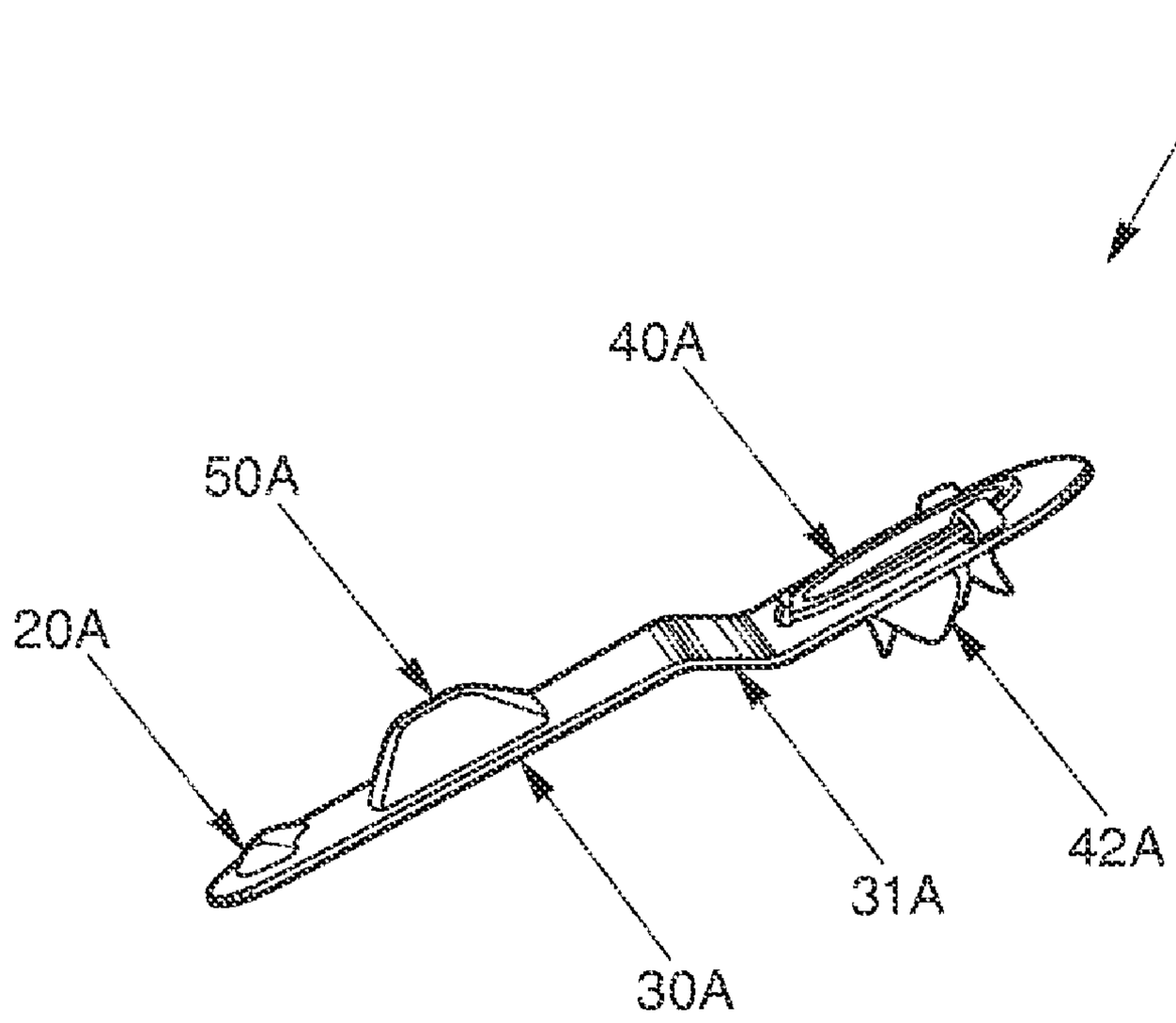
(57) **ABSTRACT**

A frame back retainer for a multi-use frame includes a tab-like structure and a fastening structure. The tab-like structure defines an aperture at a first end and defines a graduated ramp portion at a second end. The tab-like structure includes at least one securing arm depending from the tab-like structure near the aperture. The fastening structure is positioned through the aperture of the tab-like structure and mounted to the multi-use frame. The fastening structure defines a raised pedestal profile from a surface of the multi-use frame for allowing rotation of the tab-like structure relative to the fastening structure. The at least one securing arm engaging an outer edge of the fastening structure to rotatably attach the fastening structure to the tab-like structure. In operation, the user rotates the tab-like structure relative to the fastening structure about an axis to engage or disengage the graduated ramp portion within the multi-use frame.

8 Claims, 14 Drawing Sheets



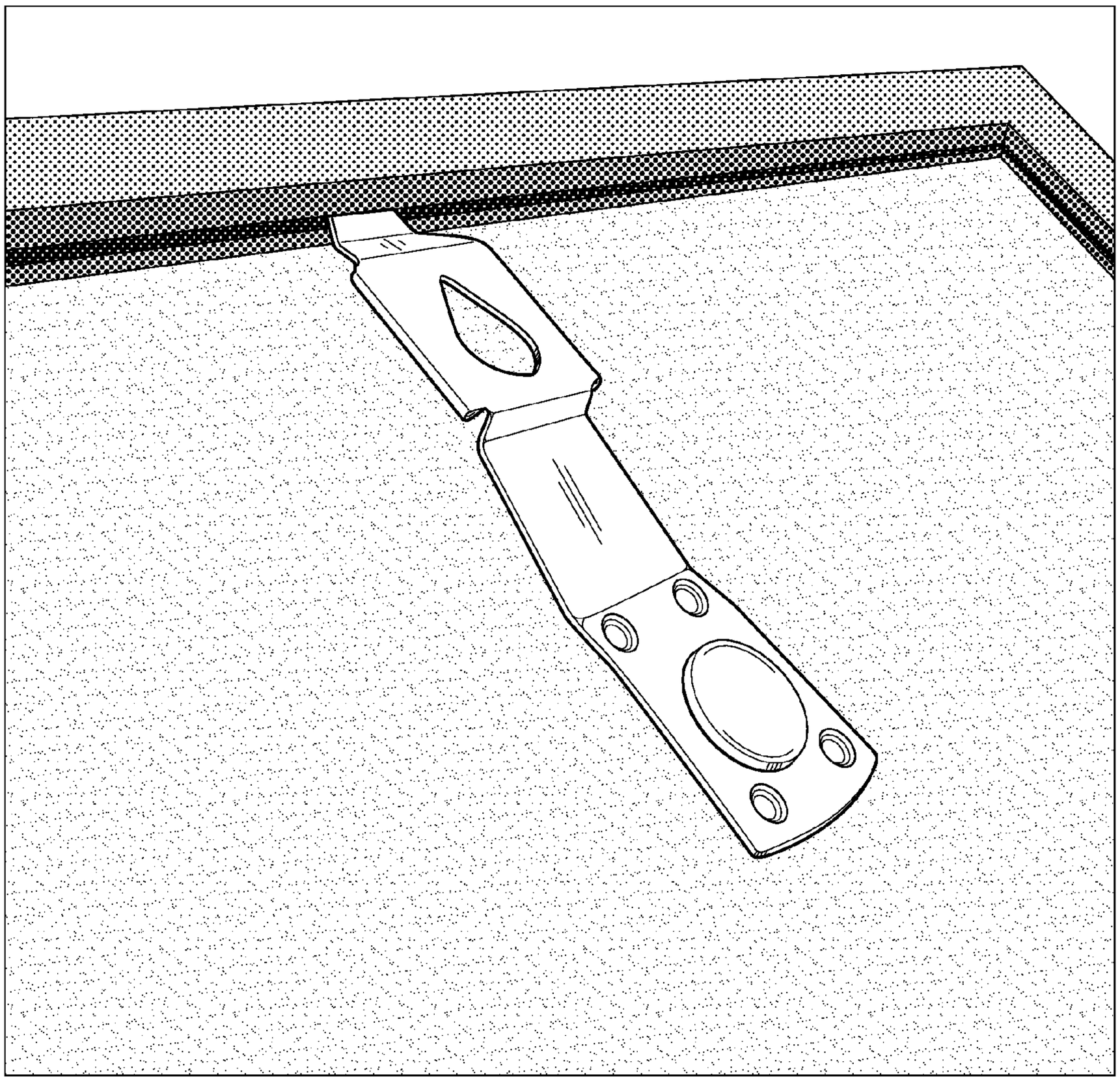


Fig. 1
Prior Art

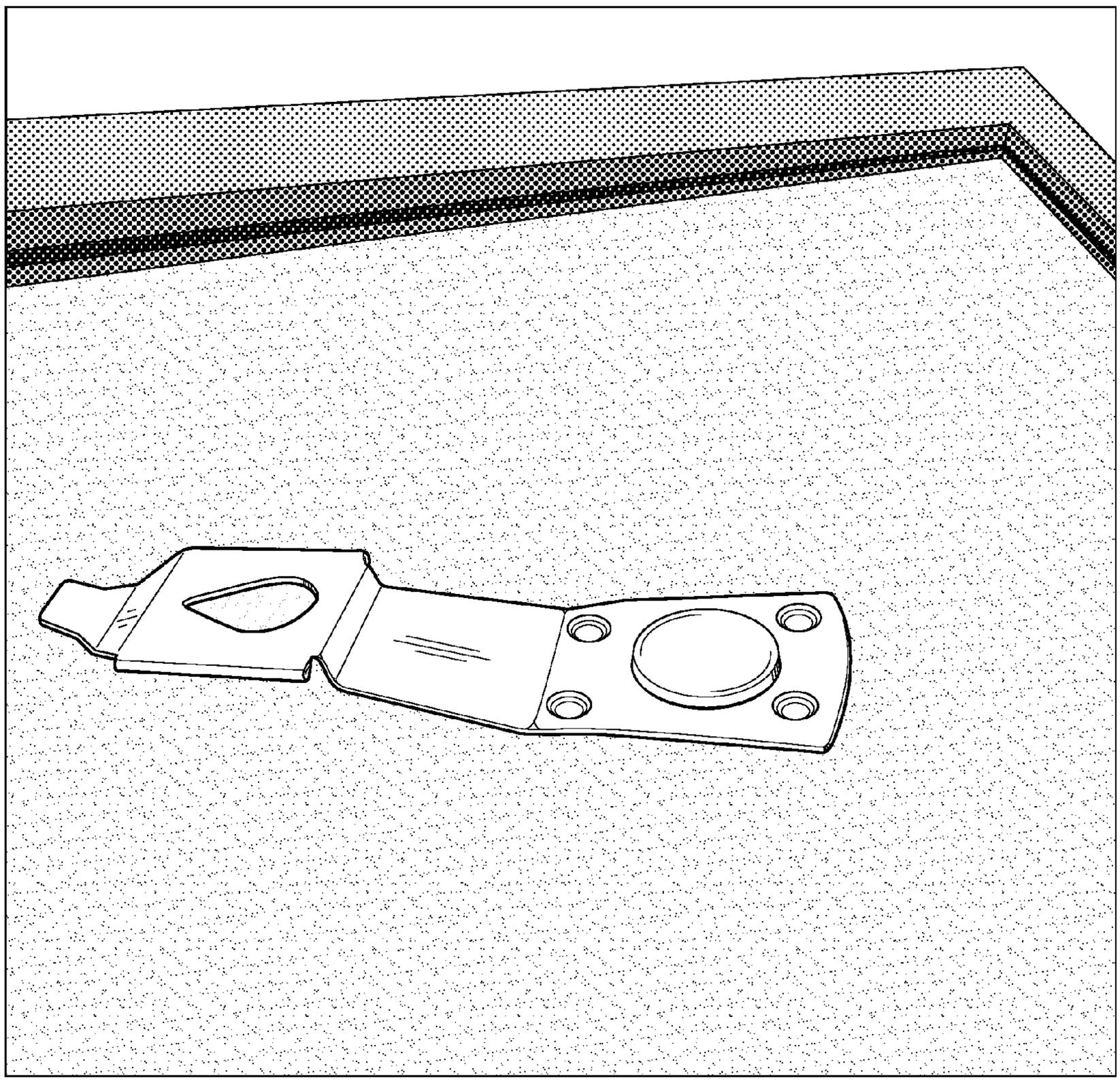


Fig. 2
Prior Art

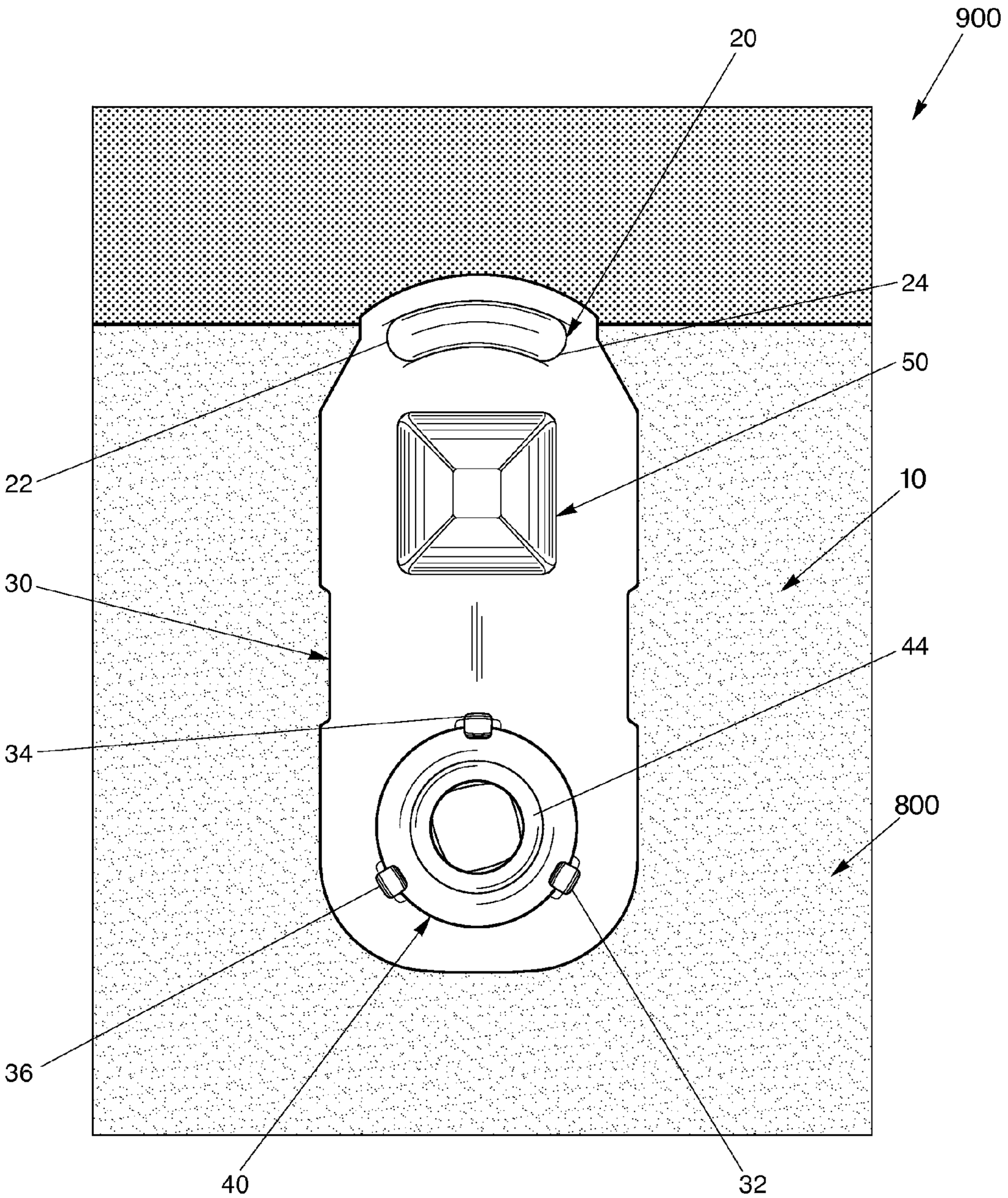


Fig. 3

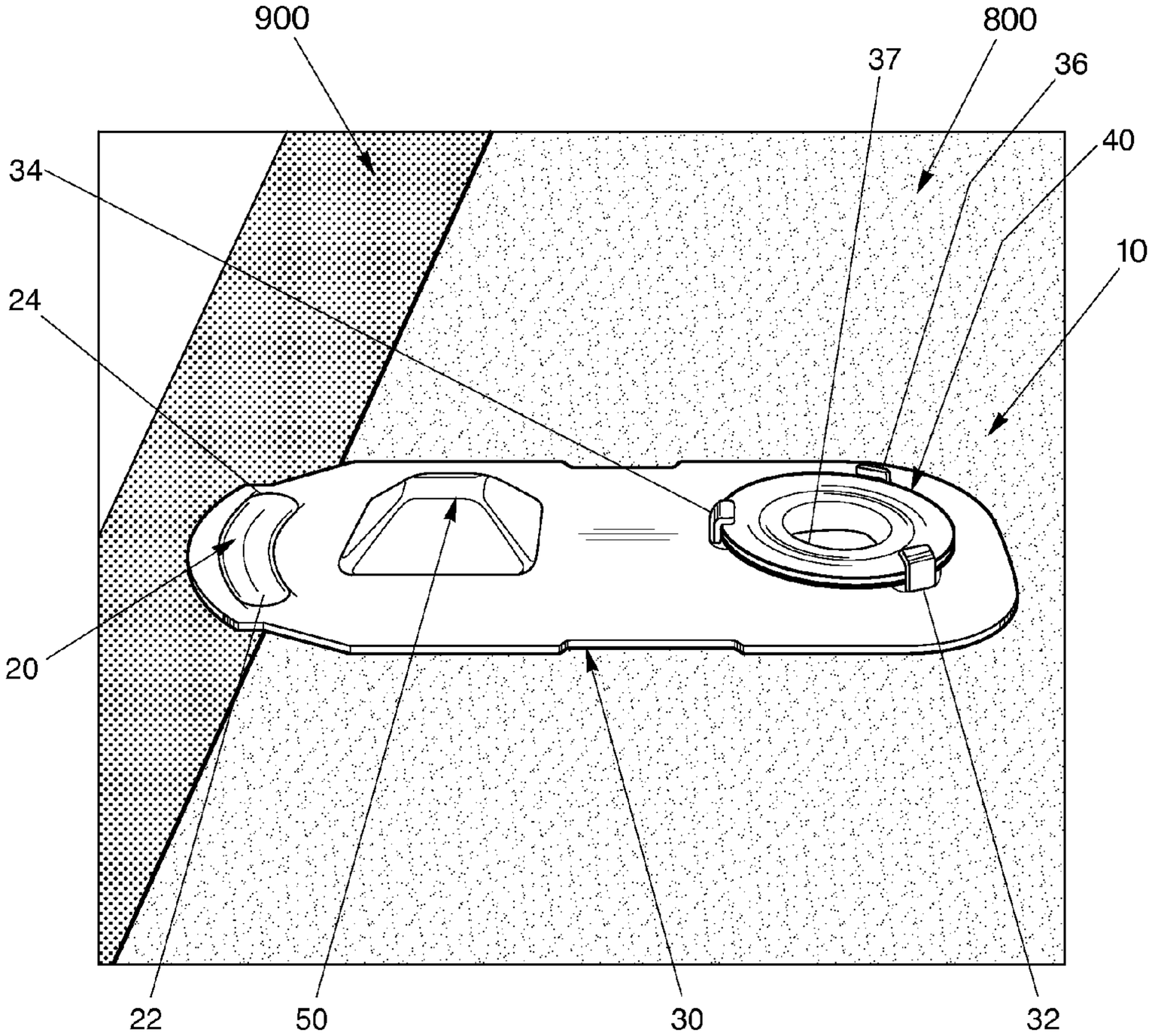


Fig. 4

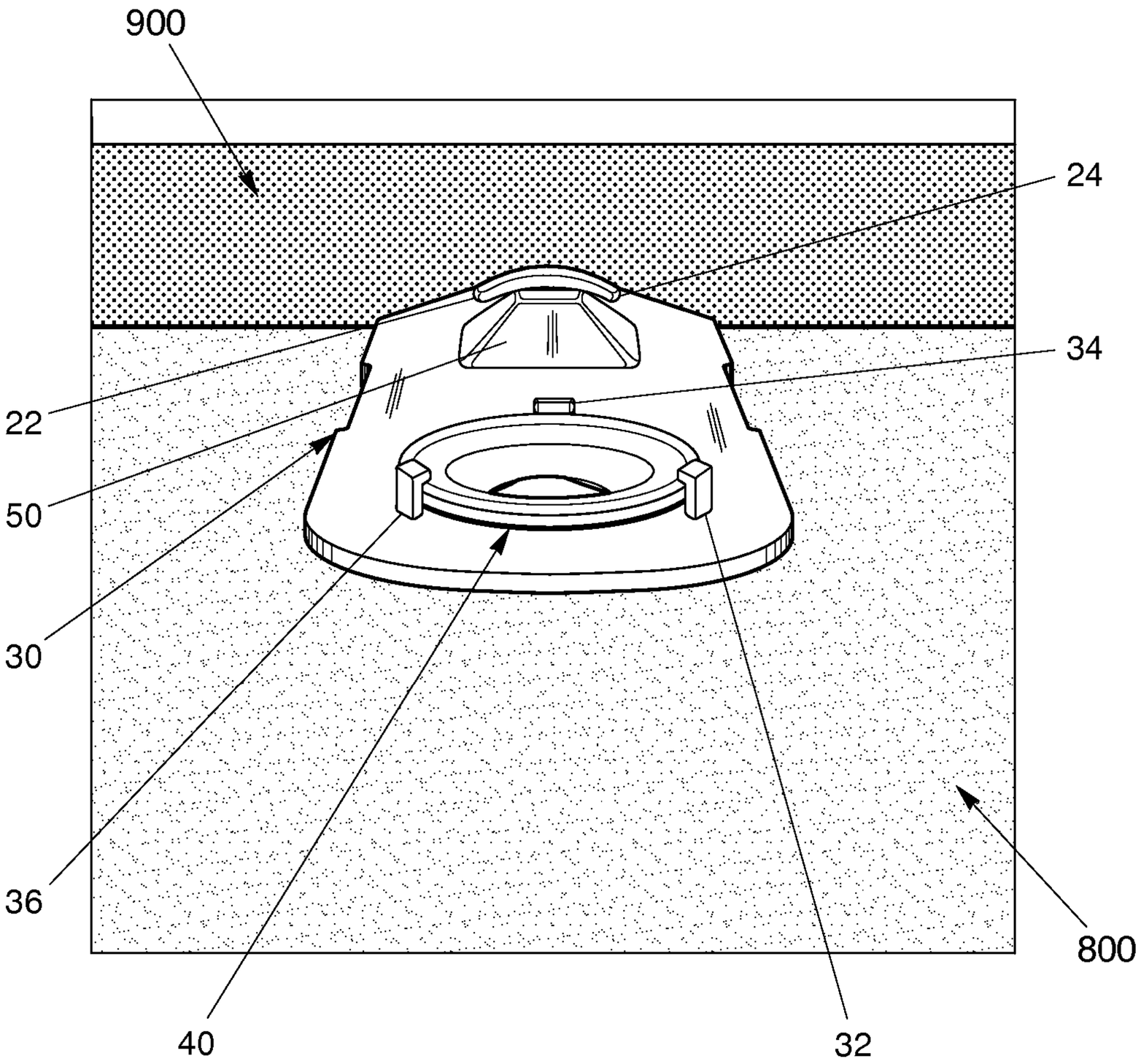


Fig. 5

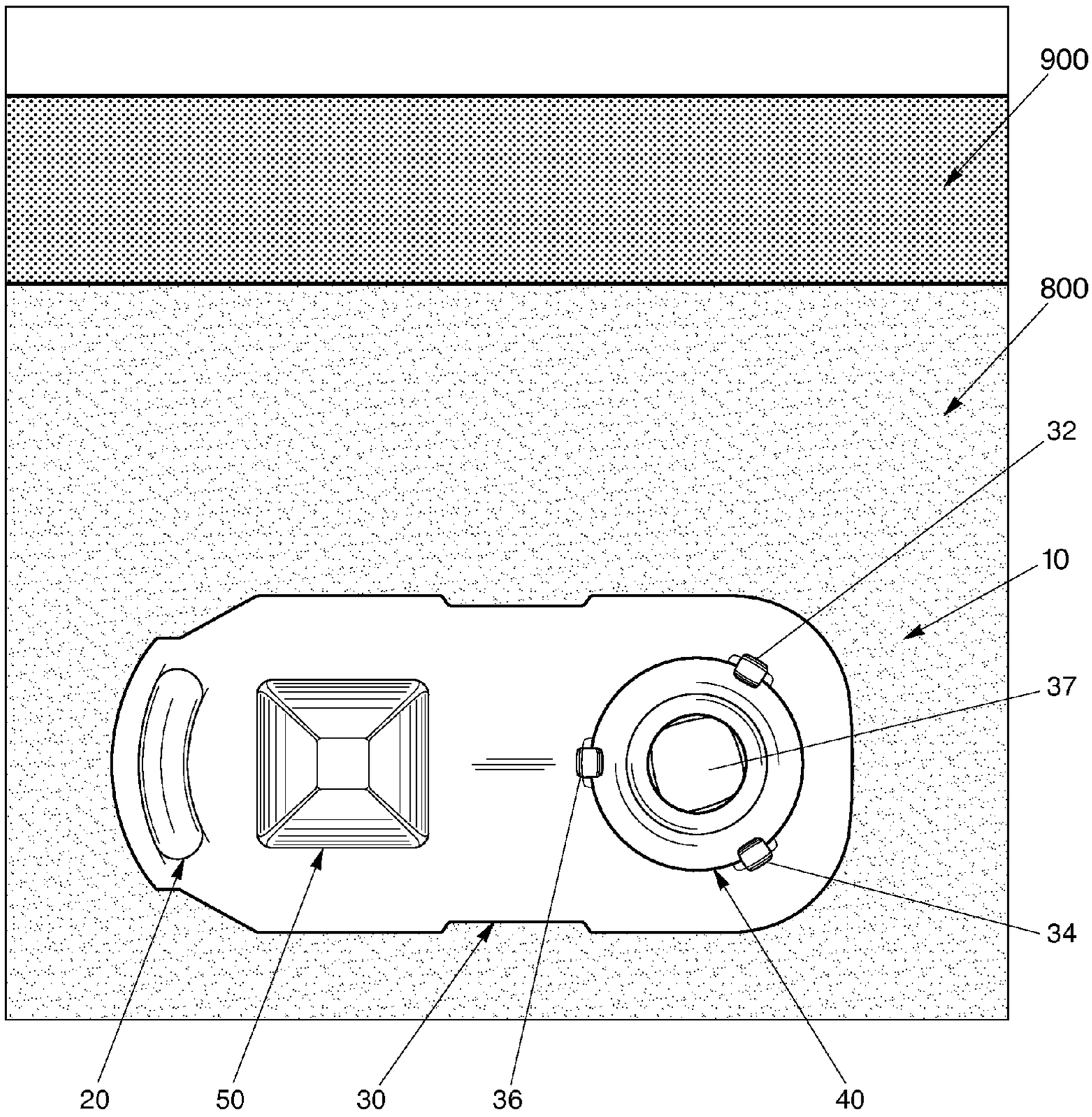


Fig. 6

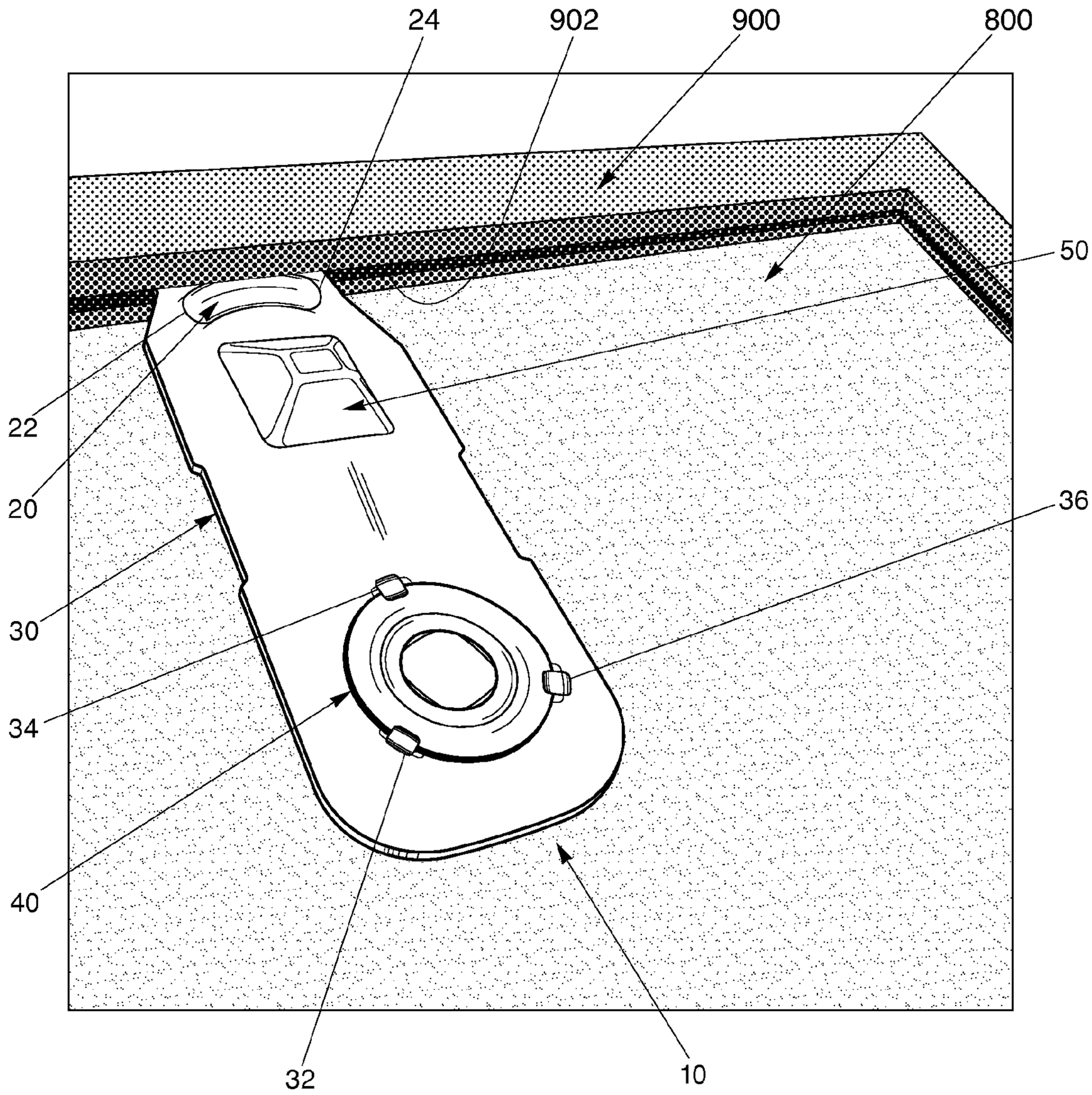


Fig. 7

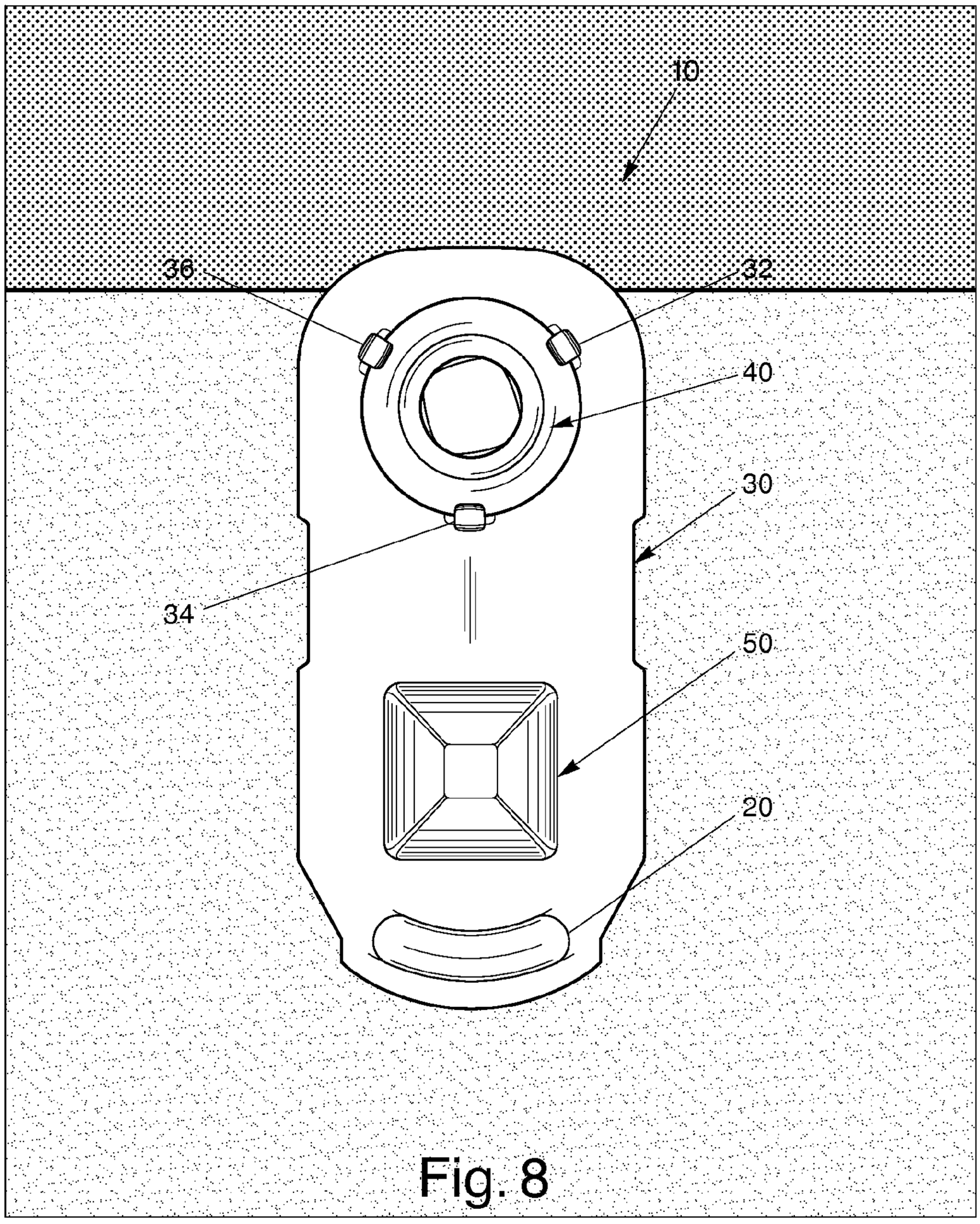


Fig. 8

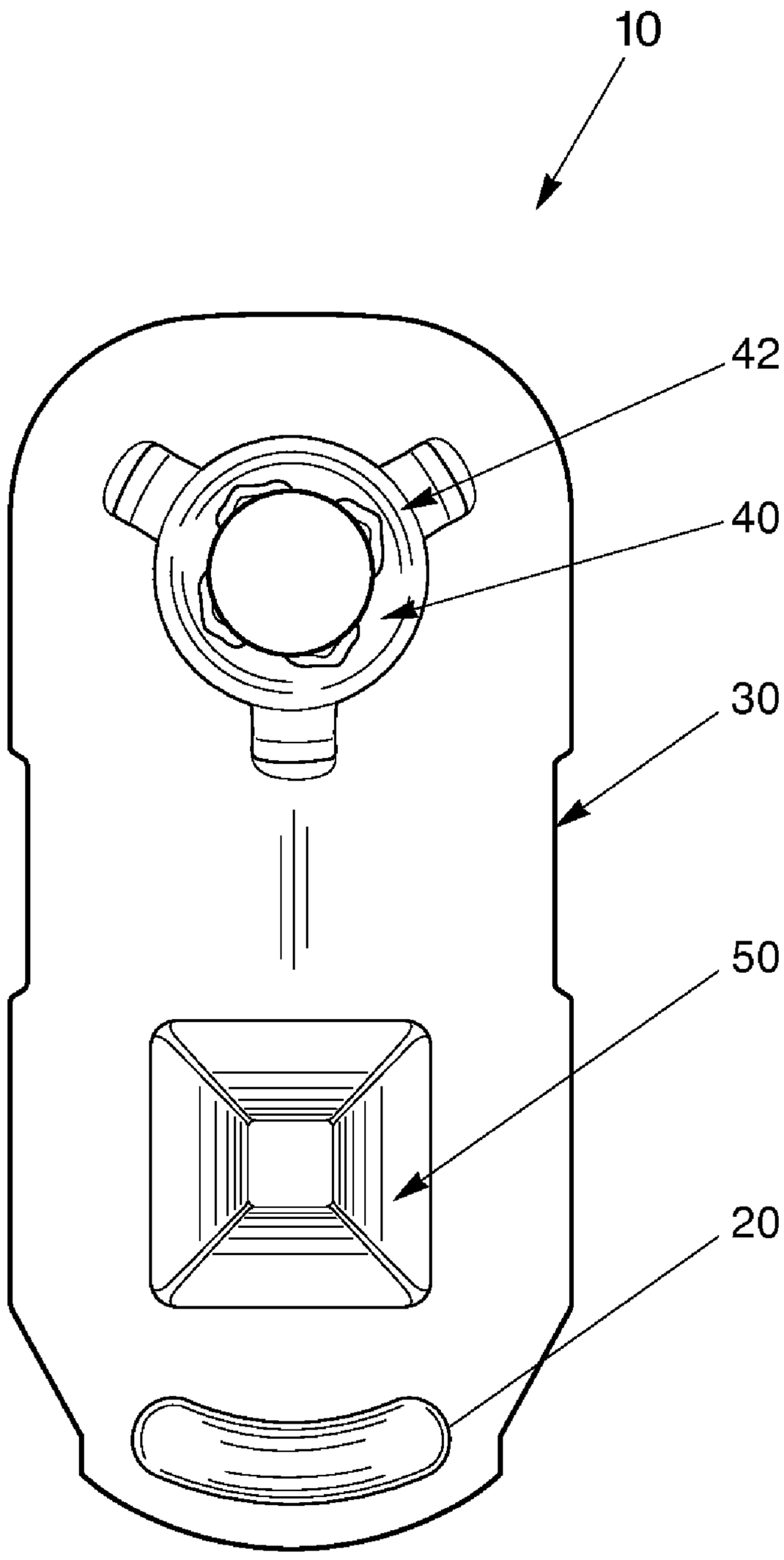


Fig. 9

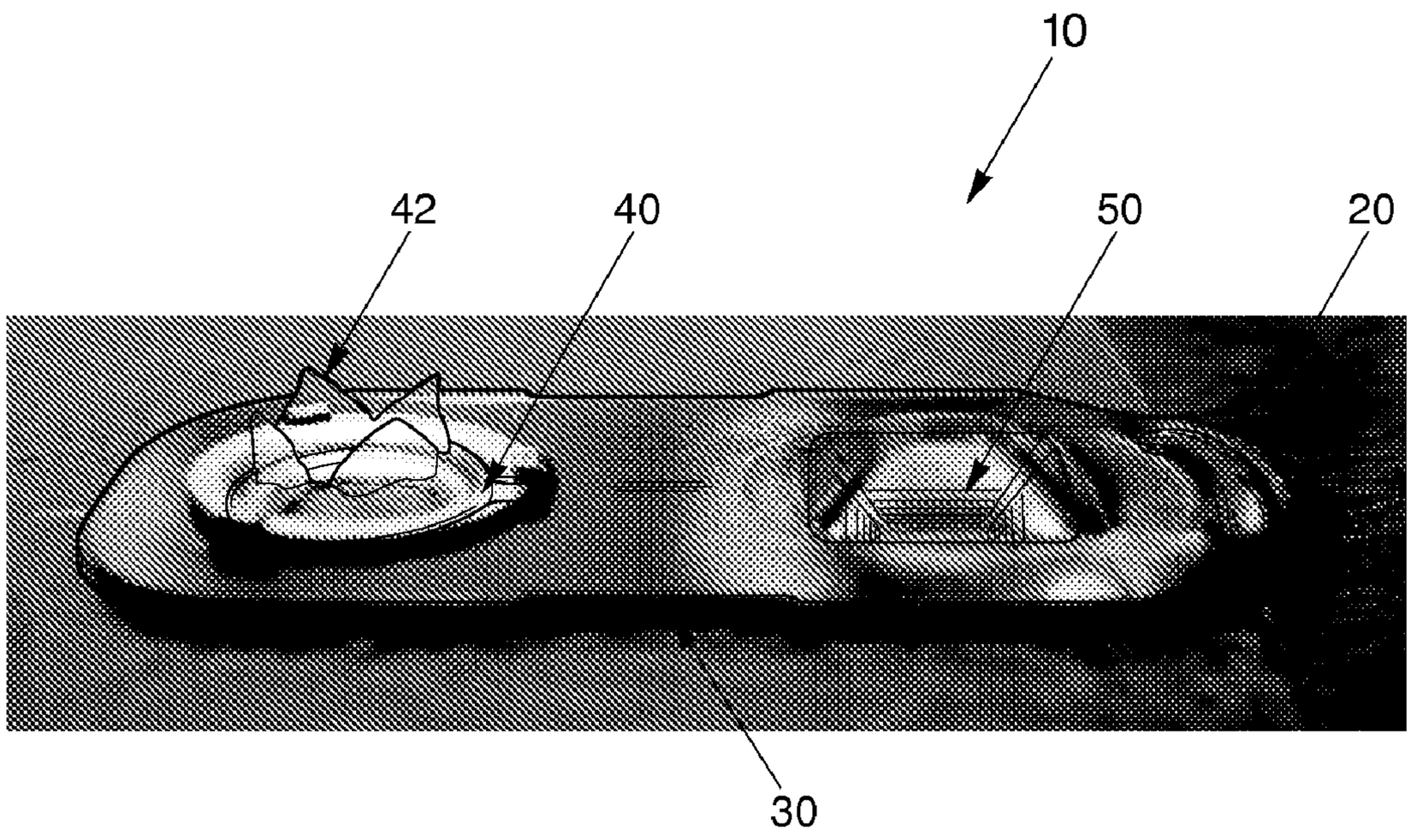


Fig. 10

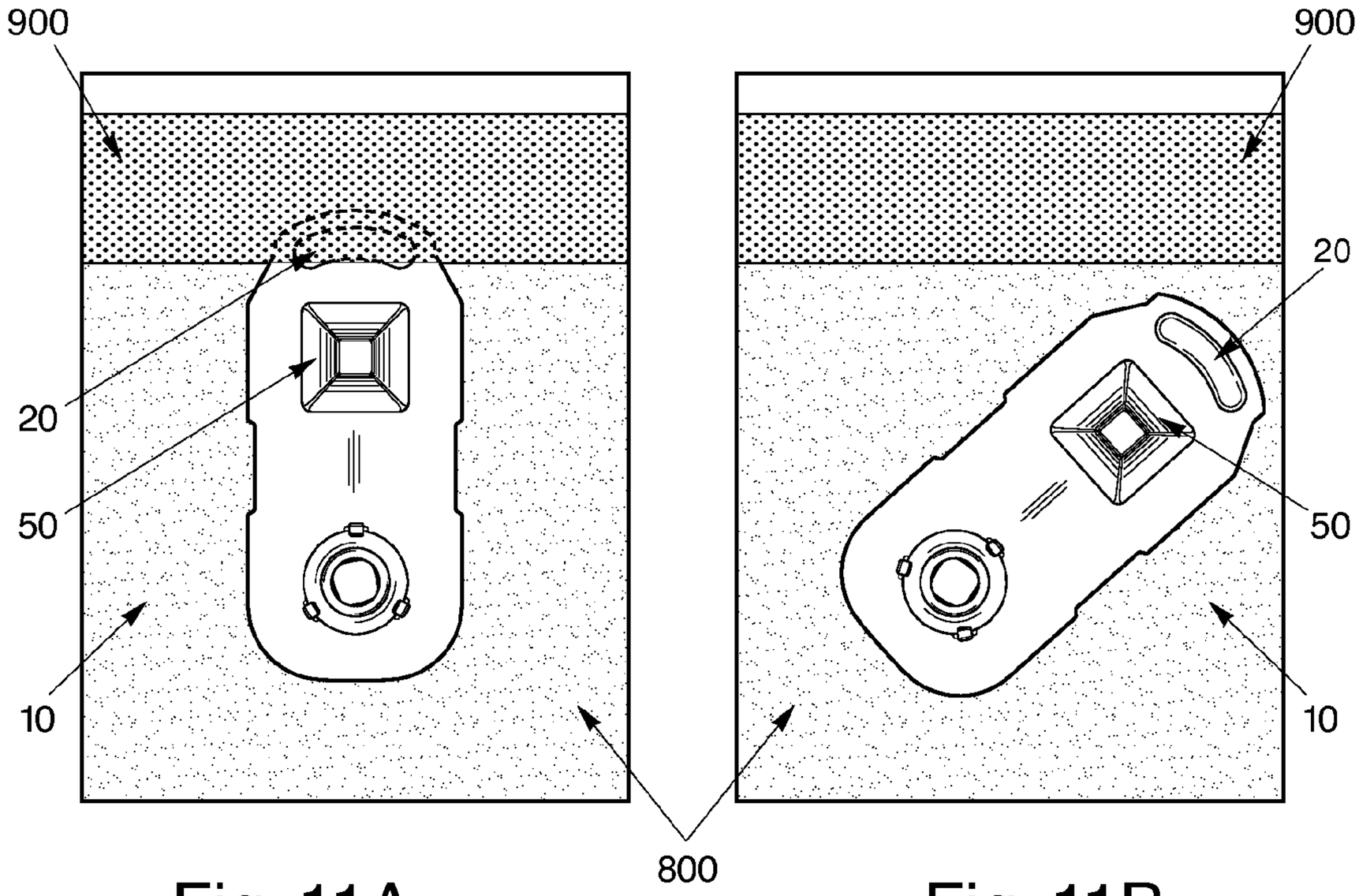


Fig. 11A

Fig. 11B

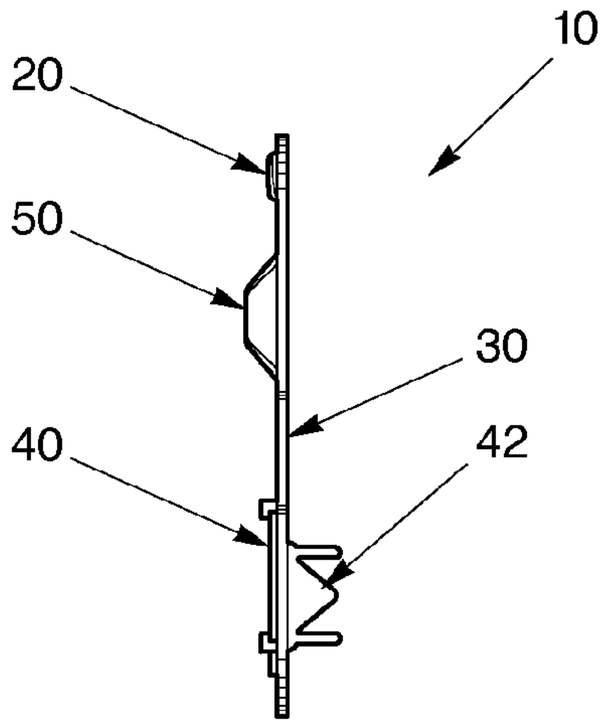


Fig. 11C

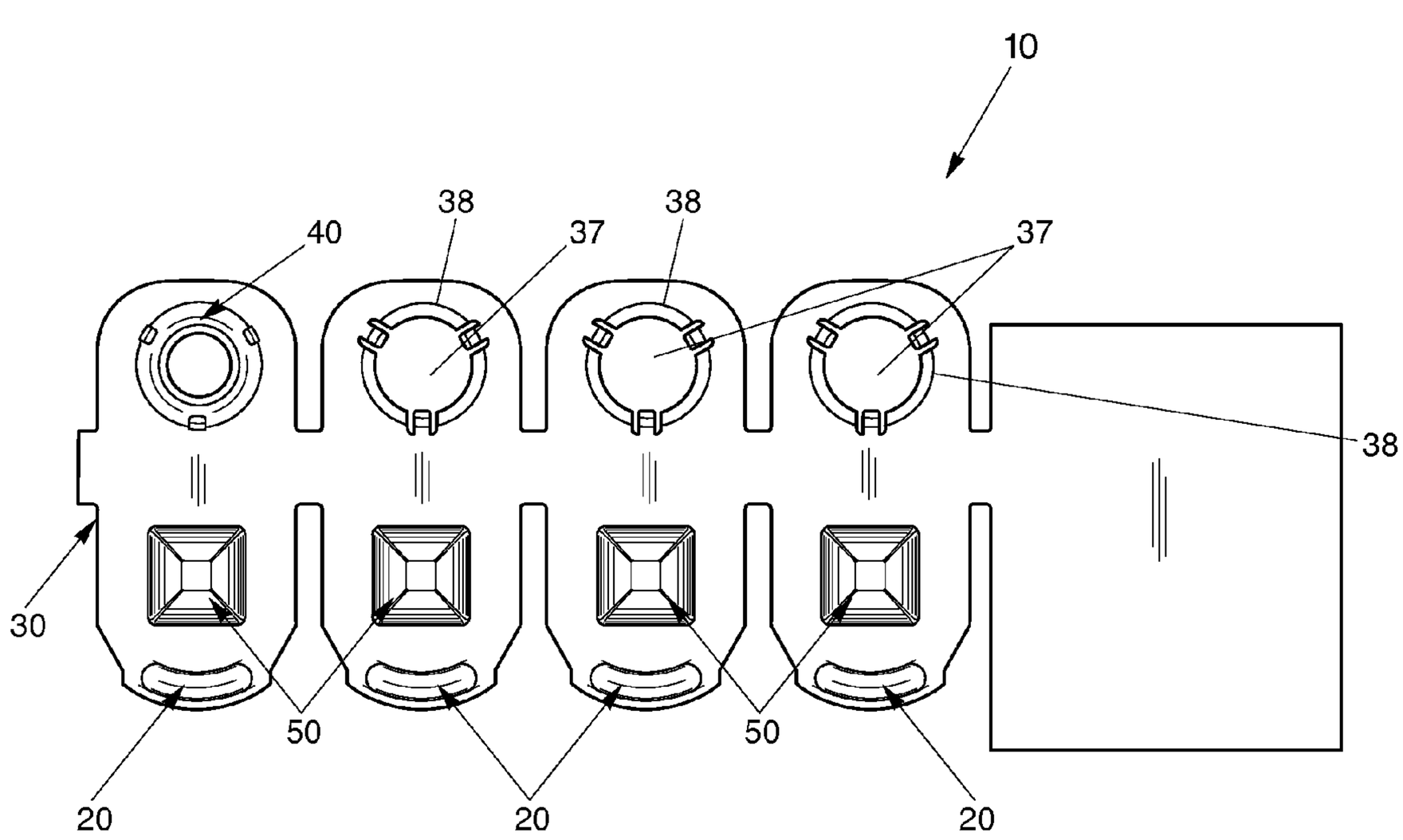


Fig. 12

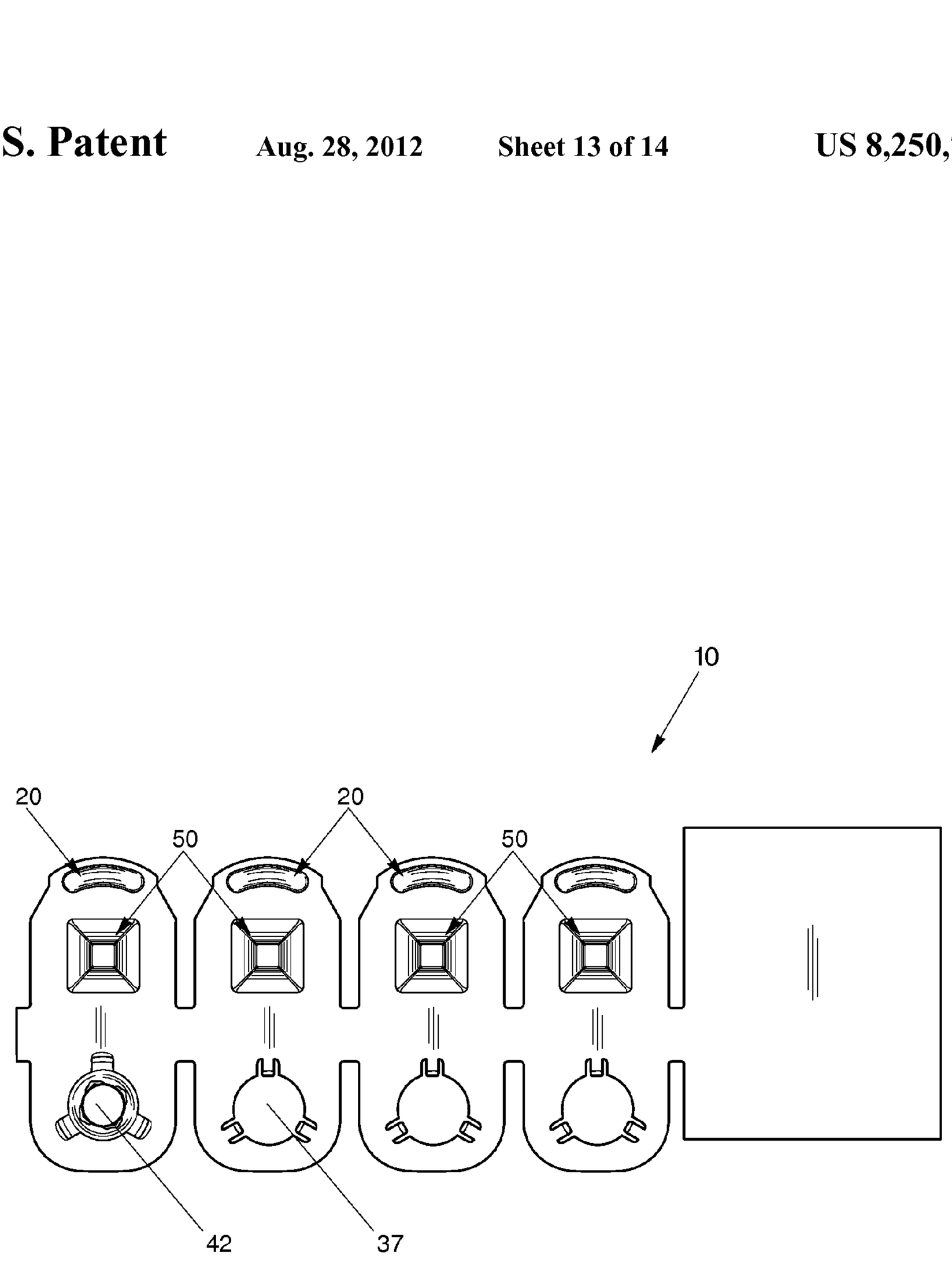


Fig. 13

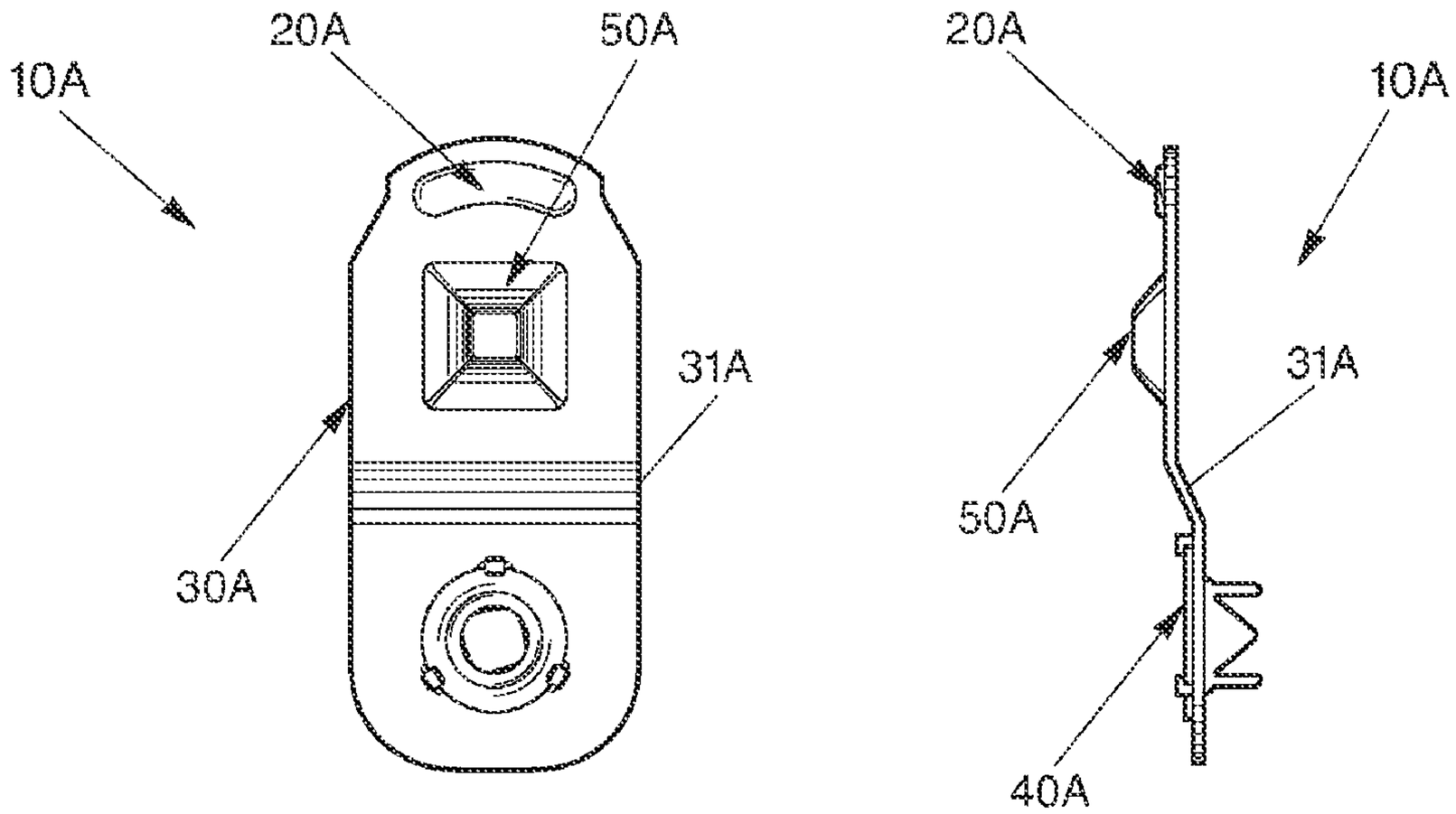


Fig. 14A

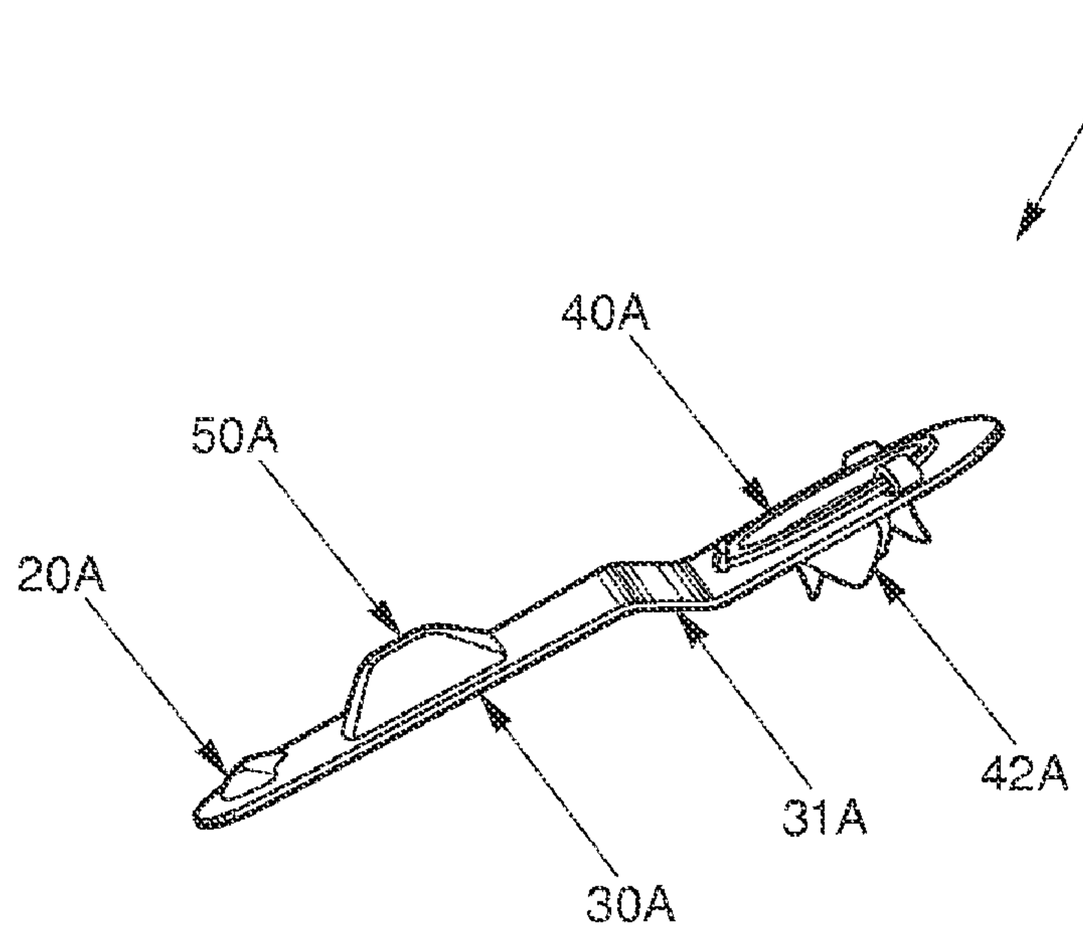


Fig. 14B

FRAME BACK RETAINER

CROSS REFERENCE TO RELATED APPLICATION

This non-provisional patent application is related to and claims priority from earlier filed, U.S. Provisional Patent Application No. 61/235,036 filed Aug. 19, 2009, all of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates to multi-use frame hardware and methods of manufacturing the same. In the multi-use frame industry, there are various types of multi-use frame hardware which includes turn buttons for maintaining a frame back inside a multi-use frame with a photo or artwork sandwiched therebetween.

The present invention relates to turn button hardware. Prior art turn buttons are typically tab-like structures that are attached to a multi-use frame back. The tabs are pivotally attached to the back so that they may pivot in place. The free ends of the turn button tabs, when in a locked position, reside within a groove in the multi-use frame to secure it in place. When pivoted to an open position, the tabs are no longer engaged with the frame so the multi-use frame back can be freely removed to gain access to the back of the multi-use frame itself to insert or remove a picture therefrom. Also, a turn button can be attached to the multi-use frame itself and pivoted or bent to communicate with the multi-use frame back.

As illustrated in FIGS. **1-2**, prior art turn buttons are typically attached to the multi-use frame back by a rivet or simply punched therethrough. This attachment dictates the pivoting tension of the turn button itself. For example, a very secure rivet connection will result in a very tight turn button making it very difficult to turn for the user of the frame. A loose attachment makes it easier to manipulate the turn button but the connection will also be loose making a poor locking connection and/or making it possible for the turn button to fall off of the multi-use frame back completely.

Sometimes, the turn button may fail to reliably and predictably secure the frame back to the frame for a variety of reasons. On occasion, the frame back is made of material, such as soft cardboard, lacking sufficient strength to properly retain the turn button therein. Upon installation, the rivet may be improperly flared allowing the turn button to disengage. Also, a consumer may not properly place the turn button in the correct position to secure the frame back to the frame.

Therefore, there is a need for a repetitive, reliable, and predictable way of securing the frame back to the frame to prevent disengagement of the frame back from the frame. Also, there is a need for securing the frame back to the multi-use frame which is convenient and easy to use for a consumer.

BRIEF SUMMARY OF THE INVENTION

The present invention preserves the advantages of existing frame back retainers while providing new advantages not found in currently available frame back retainers and overcoming many disadvantages of such currently available frame back retainers. The present invention provides a frame back retainer for multi-use frames which provides a repetitive, reliable, and predictable way of securing the frame back to the frame to prevent disengagement of the frame back from the frame. Also, the frame back retainer secures the frame back to the multi-use frame which is convenient and easy to use for a consumer.

The frame back retainer includes a tab-like structure and a fastening structure which is secured to a frame back of a multi-use frame. The multi-use frame may be selected from a group consisting of digital picture frames, picture frames, and frame for displaying documents, photographs, or other materials. The multi-use frame includes a front and rear portion of the frame and a frame back. The frame back is positioned within the rear portion of the frame. The tab-like structure is mounted to the frame back. In one embodiment, the tab-like structure is pivotally mounted to the frame back for pivotal movement about an axis.

The tab-like structure defines an aperture at a first end and defines a graduated ramp portion at a second end. The graduated ramp portion is tapered on both ends of the ramp portion to allow engagement of the ramp portion within the kerf from either a left or right direction or clockwise or counterclockwise. The tab-like structure includes at least one securing arm depending from the tab-like structure near the aperture. The graduated ramp portion of the tab-like structure frictionally engages a frame kerf between the frame and the fame back to secure the frame back in place when the tab-like structure pivots or rotates relative to the frame back.

In addition, the tab-like structure includes an angular offset portion between the graduated ramp portion and the aperture to allow the graduated ramp portion to frictionally engage the frame kerf without requiring assistance of additional layers of material. Also, the tab-like structure has a raised portion near the graduated ramp portion for manipulation by a user's fingers to move the tab-like structure to the left or to the right.

The fastening structure is positioned through the aperture of the tab-like structure and mounted to the multi-use frame. In one embodiment, the tab-like structure defines a recessed area along an outer periphery of the aperture for receiving the fastening structure. The fastening structure defines a raised pedestal profile from a surface of the multi-use frame for allowing rotation of the tab-like structure relative to the fastening structure. The at least one securing arm engaging an outer edge of the fastening structure to rotatably attach the fastening structure to the tab-like structure.

In operation, the user rotates the tab-like structure relative to the fastening structure about an axis to engage or disengage the graduated ramp portion within the frame kerf of the multi-use frame to secure the frame back to the frame.

It is therefore an object of the present invention to provide a frame back retainer with repetitive, predictable, and simple securing of a frame back to a multi-use frame.

It is a further object of the embodiment to provide a frame back retainer with a tab-like structure having a raised ramp portion to frictionally engage within the multi-use frame for securing the frame to the frame back.

Another object of the embodiment is to provide a frame back retainer with an angular offset portion offset portion to spring-bias the tab-like structure and allow the graduated ramp portion to frictionally engage the frame kerf without requiring assistance of additional layers of material.

Another object of the embodiment is to provide a fastening structure defining a raised pedestal profile from a surface of the object for allowing rotation of the tab-like structure relative to the fastening structure.

Other objects, features and advantages of the invention shall become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features which are characteristic of the frame back retainer are set forth in the appended claims. However, the frame back retainer, together with further embodiments and attendant advantages, will be best understood by reference to the following detailed description taken in connection with the accompanying drawing Figures.

FIG. **1** is a perspective view of a prior art turn button engaged within a kerf of a frame;

FIG. **2** is a perspective view of a prior art turn button disengaged from a kerf of a frame;

FIG. **3** is a top view of the frame back retainer constructed in accordance with the teachings of the present invention;

FIG. **4** is a top side view of the frame back retainer of FIG. **1**;

FIG. **5** is a rear view of the frame back retainer of FIG. **1**;

FIG. **6** is a top view of the frame back retainer of FIG. **1** with the frame back retainer in a disengaged position;

FIG. **7** is a top view of the frame back retainer of FIG. **1** with the frame back retainer in a engaged position within a kerf of a frame;

FIG. **8** is a top view of the frame back retainer of FIG. **1**;

FIG. **9** is a bottom view of the frame back retainer of FIG. **1**;

FIG. **10** is a side bottom view of the frame back retainer of FIG. **9**;

FIG. **11**A is a top view of FIG. **1** with the frame back retainer in an engaged position within the kerf of the multi-use frame;

FIG. **11**B is a top view of FIG. **1** with the frame back retainer in a disengaged position from the kerf of the multi-use frame;

FIG. **11**C is a side view of the frame back retainer of FIG. **1**;

FIG. **12** is a top view of multiple frame back retainers illustrating various stages of construction; and

FIG. **13** is a bottom view of multiple frame back retainers of FIG. **12** illustrating various stages of construction;

FIG. **14**A is a top view of an alternative frame back retainer having an angular offset and a side view of the frame back retainer having an angular offset portion; and

FIG. **14**B is a perspective view an alternative embodiment of the frame back retainer having an angular offset portion.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now generally to FIGS. **3-14**, the frame back retainer **10** of the instant invention is illustrated. The present invention provides a frame back retainer **10** with a ramp portion **20** or ramp friction pad that provides a repetitive, reliable, and predictable way of securing a frame back **800** to a multi-use frame **900** to prevent disengagement of the frame back **800** from the frame **900**. In addition, the present invention provides the frame back retainer **10** for securing the frame back **800** to the multi-use frame **900** which is convenient and easy to use for a consumer.

Referring generally to FIGS. **3-14**, the present invention discloses a frame back retainer **10** that is superior to known retainers by being far superior in construction and ease of use. Referring to FIG. **3**, the frame back retainer **10** includes a tab-like structure **30** or pivoting tab and a fastening structure **40** which is secured to a frame back **800** of a multi-use frame **900**. The tab-like structure **30** or pivoting tab has a rectangular shape or other desired shape and defines an aperture **37** for receiving a fastening structure **40** at a first end and defines a ramp portion **20** or ramp friction pad at a second end. In one embodiment, a surrounding area of the aperture **37** is configured to seat the fastening structure **40**—such as a swivel rosette fastener element **42** with a tiered or raised pedestal profile **44**. The surrounding area of the aperture **37** is a recessed region **38** to securely seat a swivel rosette fastener element **42** with a raised or tiered pedestal profile **44**.

The tab-like structure **30** is mounted to the frame back **800**. In one embodiment, the tab-like structure **30** is pivotally mounted to the frame back for pivotal movement about an axis. The tab-like structure **30** defines an aperture **37** at a first end and defines a ramp shaped portion **20** or friction pad at a second end. In one embodiment, the ramp shaped portion **20** defines a graduated and raised profile with an arctuate or radial shape. Both left end **22** and right end **24** of the ramp friction pad **20** define a graduated or inclined surface to facilitate the inserting of the ramp friction pad **20** within a kerf **902** between the frame back **800** and the frame **900** from either a clockwise or counter-clockwise direction. In a preferred embodiment, the ramp friction pad **20** or ramp portion provides sufficient height to frictionally fit within the kerf **902**. Of course, the ramp friction pad **20** may be adjustable for height, width, and graduation at opposite ends depending upon the size of the kerf **902**, desired frictional fit, and resistance.

In another embodiment, the ramp friction pad **20** is tapered on both ends of the ramp friction pad **20** to allow engagement of the ramp friction pad **20** or ramp portion within the kerf **902** from either a left or right direction or, alternatively, clockwise or counterclockwise. The ramp portion **20** of the tab-like structure **30** frictionally engages a frame kerf between the frame **900** and the frame back **800** to secure the frame back **800** in place when the tab-like structure **30** pivots or rotates relative to the frame back **800**.

The tab-like structure **30** includes at least one securing arm **32**, **34**, **36** depending from the tab-like structure **30** near the aperture **37**. The securing arm **32**, **34**. **36** is curled over or bent to securely engage a surface of the fastening structure **40**. In a preferred embodiment, the tab-like structure **30** includes three securing arms **32**, **34**, **36**. The number of securing arms **32**, **34**, **36** is adjustable depending upon a fastening structure **40** and size of the aperture **37**.

Also, the tab-like structure **30** has a raised portion **50** or operating knob near the graduated ramp friction pad **20** for manipulation by a user's fingers to move the tab-like structure **30** to the left or to the right. In one embodiment, the raised portion **50** is an operating knob **50** with a raised profile. In a preferred embodiment, the operating knob **50** defines a peripheral square or rectangular shape with a centrally raised portion similar to a pyramid-like structure. The operating knob **50** serves more than one purpose. The first purpose of the operating knob **50** is to provide a user a substantially raised surface for moving the tab-like structure **30** from an engaged to a disengaged position within the kerf **902** of the frame **900**. The second purpose of the operating knob **50** is to act as a stabilizer or spacer for smoothly coiling product in parallel to rosette element or fastening structure **40** during the manufacturing or coiling process.

The second component of the frame back retainer **10** is the fastening structure **40**. The fastening structure **40** is positioned through the aperture **37** of the tab-like structure **30** and mounted or firmly attached, permanently or temporarily, to the frame back **800**. To facilitate the fastening structure **40** securing within the aperture **37**, the tab-like structure **30** defines a recessed area **38** (FIG. **12**) along an outer periphery of the aperture **37** for receiving the fastening structure **40**. In one embodiment, the fastening structure **40** includes the

swivel rosette fastener element **42** having a plurality of prongs which are secured into the material of the frame back **800** and a raised or tiered pedestal **44** extending above the frame back **800**. The fastening structure **40** defines a raised pedestal profile **44** from a surface of the frame back **800** for allowing rotation of the tab-like structure **30** relative to the fastening structure **40**.

Securing rosettes to multi-use frame backs of various materials need not be discussed herein as they are known in the art. However, it is contemplated that the fastening structure **40** may also be a flared cylinder or other fastener capable of securing the tab-like structure **30** to the frame back **800** while allowing a raised, pedestal profile **44** above the surface of the frame back to provide sufficient clearance between the tab-like structure **30** and a surface of the frame back **800**. At least one securing arm **32**, **34**, **36** is bent over or cured to engage an outer edge of the fastening structure **40** to rotatably attach the fastening structure **40** to the tab-like structure **30**.

The fastening structure **40** further includes a raised or tiered pedestal profile **44** from a surface of the frame back **800** for allowing rotation of the tab-like structure **30** relative to the fastening structure **40**. The pedestal profile **44** provides additional separation between the surface of the frame back **800** and the tab-like structure **30** to prevent degradation of the frame back **800**. In addition, the raised or tiered pedestal profile **44** of the fastening structure **40** provides a resistant force to the raised ramp friction pad **20** or ramp portion when it is engaged within a kerf **902** or peripheral groove of the frame **900**. Also, the raised or tiered pedestal profile **44** allows a user an ability to easily manipulate the tab-like structure **30** from an engaged to a disengaged position within the kerf **902** of the frame **900**.

The fastening structure **40** is attached to the frame back **800** which is made of materials having different structure, form, thickness, and density. Depending upon the material used in the frame back **800**, the fastening structure **40** may be selected, separate and apart from the tab-like structure **30**, to provide a secure connection between the frame back **800** and the tab-like structure **30**. The fastening structure **40**, being a separate piece or component, from the tab-like structure **30** allows the frame back retainer **10** to adapt to the type of frame **900**, size of the kerf **902**, materials used in the frame back **800**, desired friction fit of the tab-like structure **30** within the kerf **902**, and a multitude of other factors which affect the ability to retain the frame back **800** to the frame **900**.

In operation, the user rotates the tab-like structure **30** relative to the fastening structure **40** about an axis to engage or disengage the graduated ramp portion **20** within the frame kerf of the multi-use frame to secure the frame back to the frame. In operation, a user manipulates the operating knob **50** to rotate the tab-like structure **30** relative to the fastening structure **40** about an axis to engage or disengage the ramp friction pad **20** or ramp portion within the kerf **902**. Referring to FIG. **11**A, when the tab-like structure **30** is engaged within the kerf **902** or peripheral groove of the frame **900**, the ramp friction pad **20** is frictionally fit within the kerf **902** to prevent the removal of the frame back **800** from the frame **900**. Referring to FIG. **11**B, when the tab-like structure **30** is swiveled or moved out of the kerf **902**, the ramp friction pad **20** is removed from the kerf **902** and the frame back **800** can be removed from the frame **900**.

Referring to FIGS. **12** and **13**, the frame back retainer **10** of the present invention can be manufactured in a number of different ways. As illustrated, a plate and tab-like structure **30** are shown in various stages of completion. In one embodiment, the material used in the frame back retainer **10** is 0.022"-0.024" thick steel which is pre-painted to a desired color. The frame back retainer **10** will be presented in a strip form of coil-feedable frame back retainers that is adapted for use with a four head application machine. Preferably, a coil fed strip of material is provided to facilitate continuous mass production of frame back retainers **10** on the frames. The frame back retainer **10** may be manufactured "bandolier" style for economic installation by single or multi-head equipment. The frame back retainer **10** can be parted from the "bandolier" reading and installed in diverse backing materials, such as cardboard, mdf, corrugated, and plastic. Alternatively, devices can be formed from individual blanks.

Referring to FIGS. **14**A and **14**B, an alternative embodiment of the frame back retainer **10**A is illustrated. The tab-like structure **30**A includes an angular offset portion **31**A between the graduated ramp portion **20**A and the aperture **37**A to allow the graduated ramp portion **20**A to frictionally engage the frame kerf **902** without requiring assistance of additional layers of material. For example, in one embodiment, the angular offset portion **31**A of the tab-like structure **30** is offset 0.080 inches as illustrated in FIG. **14**B. Of course, it is contemplated that the angular offset **31**A may be adjusted according to the size of the kerf **902** and the ramp portion **20**A to provide a more secure connection between the frame back **800** and the frame **900**. As a result of the angular offset portion **31**A, the tab-like structure **30**A has spring-bias to facilitate engagement within the kerf **902** of the frame **900**. In one embodiment, the tab-like structure is spring-biased upwardly. By offsetting the tab-like structure **30**A, a user may use the frame back **800** and the frame **900** with or without matting materials due to the spring-bias of the tab-like structure **30**A.

The multi-use frame **900** may be selected from a group consisting of digital picture frames, picture frames, and frame for displaying documents, photographs, or other materials. The multi-use frame **900** includes a front and rear portion of the frame and a frame back **800**. Typically, the frame back **900** is positioned within the rear portion of the frame **900**.

The frame back retainer **10** has a number of advantages over the prior art. First, the frame back retainer **10** includes a ramp friction pad **20** or ramp portion which gradually guides the tab-like structure **30** into the kerf to prevent the removal of the frame back **800** from the frame **900**. Second, the frame back retainer **10** includes a tab-like structure **30** or pivoting tab which rotates or swivels about a fastening structure **40** having a raised pedestal **44** that is firmly implanted into the frame back **800** to prevent the release of the fastening structure **40** from the frame back **800** over time. Third, the frame back retainer **10** includes an operating knob **50** to allow the user to engage or disengage the retainer and also to stabilize the retainer **10** during the manufacturing process. Therefore, the frame back retainer **10** provides a reliable and durable closure which can be adapted to a variety of multi-use frames.

It would be appreciated by those skilled in the art that various changes and modifications can be made to the illustrated embodiments without departing from the spirit of the present invention. All such modifications and changes are intended to be covered by the appended claims.

What is claimed is:

1. A retainer for a multi-use frame, comprising:

a tab-like structure defining an aperture at a first end and defining a graduated ramp portion at a second end, the tab-like structure including at least one securing arm depending from a surface of the tab-like structure near the aperture;

a fastening structure positioned through the aperture of the tab-like structure and attached to the multi-use frame, the fastening structure defining a raised pedestal profile from a surface of the object for allowing rotation of the

tab-like structure relative to the fastening structure, the at least one securing arm engaging an outer edge of the fastening structure to rotatably attach the fastening structure to the tab-like structure; and

wherein a user rotates the tab-like structure relative to the fastening structure about an axis to engage or disengage the ramp portion within the multi-use frame.

2. The retainer of claim **1**, wherein the tab-like structure includes an angular offset portion between the graduated ramp portion and the fastening structure to spring-bias the tab-like structure.

3. The retainer of claim **1**, wherein the tab-like structure has a raised portion near the graduated ramp portion for manipulation by a user's fingers.

4. A multi-use frame, comprising:

a frame and frame back;

a frame back retaining mechanism mounted to the frame back, the retaining mechanism including a tab-like structure defining an aperture at a first end and defining a graduated ramp portion at a second end, the tab-like structure including at least one securing arm depending from a surface of the tab-like structure near the aperture;

a fastening structure positioned through the aperture of the tab-like structure and mounted to the frame back, the fastening structure defining a raised pedestal profile from a surface of the object for allowing rotation of the tab-like structure relative to the fastening structure, the at least one securing arm engaging an outer edge of the fastening structure to rotatably attach the fastening structure to the tab-like structure; and

wherein a user rotates the tab-like structure relative to the fastening structure about an axis to engage or disengage the ramp portion within a frame kerf between the frame back and the frame.

5. The retainer of claim **4**, wherein the tab-like structure includes an angular offset portion between the graduated ramp portion and the fastening structure to spring-bias the tab-like structure.

6. The retainer of claim **4**, wherein the tab-like structure has a raised portion near the graduated ramp portion for manipulation by a user's fingers.

7. A retainer for a multi-use frame, comprising:

a tab-like structure for retaining a frame back to a multi-use frame having a first end and a second end;

a fastening structure positioned through an aperture at the first end and pivotally mounted to the frame back of the multi-use frame for pivotal movement about an axis, at least one or more securing arms depending from a surface of the tab-like structure along a periphery of the aperture, the at least one securing arm engaging an outer edge of the fastening structure to allow pivotal movement of the tab-like structure;

the second end of the tab-like structure defining a means for engaging a frame kerf of the multi-use frame to secure the frame back to the multi-use frame;

wherein a user moves the tab-like structure relative to the fastening structure to engage or disengage the means for engaging the frame kerf of the multi-use frame.

8. The retainer of claim **7**, wherein the tab-like structure defines a recessed area along an outer periphery of the aperture for receiving the fastening structure having the raised pedestal profile.

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